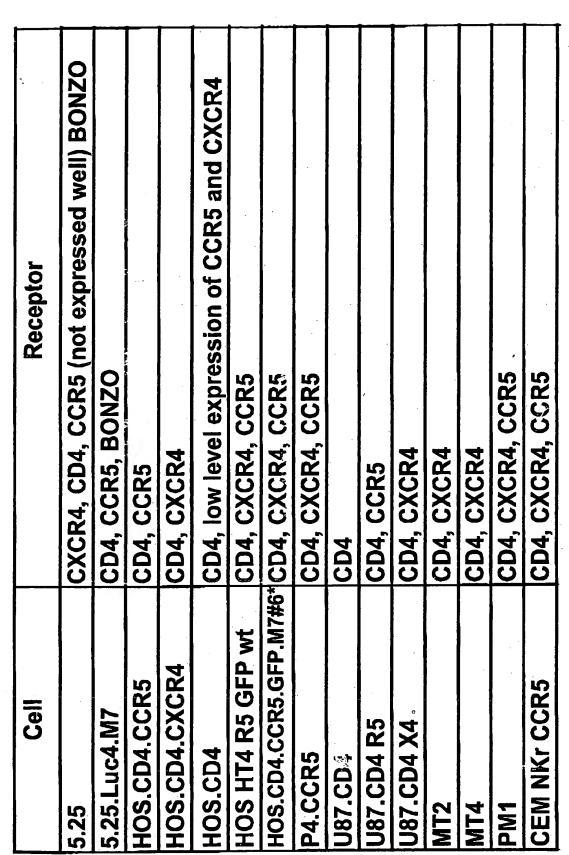
# Cells









# ${\tt Table 2}$ Representative viruses and reagents

Viruses	Envelope	Source
89.6, SF2	R5-X4/SI/B	ARRRPB
92BR014,92US076	R5-X4/SI/B	ARRRP
JR-CSF, 91US005	R5/NSI/B	ARRRP
91US054	SI/B	ARRRP
NL43, MN, ELI	X4/B	ARRRP
92HT599	X4	ARRRP
92UG031	R5/NSI/A	ARRRP(IN-HOUSE)
92TH014, 92TH026	R5/NSI/B	ARRRP(IN-HOUSE)
92BR025, 93MW959	R5/SI/C	ARRRP(IN-HOUSE)
92UG035	R5/NSI/D	ARRRP(IN-HOUSE)
92TH022, 92TH023	R5/NSI/E	ARRRP(IN-HOUSE)
93BRU20	R5-X4/SI/F	ARRRP(IN-HOUSE)
Antibodies	Epitope	SOURCE
Mabs 2F5, 1577	gp41 TM	ARRRP
Mabs IG1b12, 2G12, 17b, 48D	gp120 SU	ARRRP
Neutralization sera #2, HIV-	Polyclonal	ARRRP
IG		
Entry inhibitors		Source
CD4-IG	gp120 SU	Genentech
CD4-1GG2	gp120 SU	Adarc
SCD4	Sigma	Progenics
T20 (DP178)	gp41 TM	Trimeris
Rantes, MIP1a/b	CCR5	SIGMA/ARRRP
SDF1a/b	CXCR4	SIGMA/ARRRP
AMD 3100	CXCR4	AnorMed
Dextran sulfate, Heparin	Non-specific	Sigma

aR5 (CCR5 co-receptor), X4 (CXCR4 co-receptor)

SI (syncytium inducing), NSI (non-syncytium inducing), A,B,C,D,E,F (envelope clade designation)

bAIDS Research and Reference Reagent Program





# Table 3

### Primers Tested for the Amplification of HIV Envelope

### RT PRIMERS

RT env\_N3 RT env 9720

5'-GGA GCA TTT ACA AGC AGC AAC ACA GC-3'

RT env 9740

5' -TTC CAG TCA VAC CTC AGG TAC-3' 5'-AGA CCA ATG ACT TAY AAG G-3'

# 5' PCR PRIMERS

5' -GGG CTC GAG ACC GGT CAG TGG CAA TGA GAG TGA AG- 3'

5'env\_Xho/Pin 5'-GGG CTC GAG ACC GGT GAG CAG AA-3 ACA GTG GCA ATG A-3'

5'env\_START 5'-GGG CTC GAG ACC GGT GAG CAG AAG ACA GTG GCA ATG -3'

## 31 PCR PRIMERS

3' env

5' -GGG TCT AGA ACG CGT TGC CAC CCA TCT TAT AGC AA- 3'

3'env\_Xba/Mlu 5'-GGG TCT AGA ACG CGT CCA CTT GCC ACC CAT BTT ATA GC-3' 5'-GGG TCT AGA ACG CGT CCA CTT GCC ACC CAT BTT A-3'

3'env\_STOP 3' delta CT

|r ==

5' -GAT GGT CTA AGA CGC TGT TCA ATA TCC CTG CCT AAC TC- 3'

All Experiments are located in Virologic Book number 0188



# Table 4 (Panel 1)

**Anti-HIV Drugs** 

	Allu-	HIV Drugs	
Drug/Compound	Generic	Trademark	Manufacturer
	Name		
			A AMERICAN SANDAYAN AND AND AND AND AND AND AND AND AND A
AZT, ZDV	Zidovudine	Retrovir	Glaxo/Wellcome .
3TC	Lamivudine	Epivir	Glaxo/Wellcome
AZT + 3TC	Ctounding	Combivir	Glaxo/Wellcome
d4T	Stavudine	Zerit	Bristol-Myers/Squibb
ddl ddC	Didanosine Zalcitabine	Videx Hivid	Bristol-Myers/Squibb Hoffman La Roche
1592U89	Abacavir	Ziagen	Glaxo/Wellcome
AZT + 3TC + 1592U89	Abacavii	Trizivir	Glaxo/Wellcome
(-)FTC (5-fluoro-3TC; Corviracil)	Emtricitabine	11121411	Triangle Pharmaceuticals
(-)FTC + (+)FTC (50:50)	Racimir	<del> </del>	QuadPharma
DAPD (DXG active)	Amdoxovir	<del>                                     </del>	Triangle Pharmaceuticals
F-ddA (2-fluoro-ddA)	Lodenosine		Medimmune Oncology (US Bioscience)
BCH-10652, dOTC	Lodonosine		BioChem Pharma, Inc.
(2-deoxy-3-oxa-4-thiocytidine)			
D-d4FC			Triangle Pharmaceuticals (Schinazi)
RT inhibitors (NTRTI, nucleotide analo	igs) u	Mark 2 A S	in the second second second second
bis-POC PMPA (GS-4331)	Tenofovir		Gilead Sciences
bis-POM PMEA (GS-840)	Adefovir dipivoxil		Gilead Sciences
RT Inhibitors (NNRTI, non-nucleosides	s);		There is a second of the secon
BI-RG-587	Nevirapine	Viramune	Boehringer/Ingleheim (Roxanne)
BHAP PNU-90152T	Delavirdine	Rescriptor	Pharmacia & Upjohn
DMP 266 (L-743,726)	Efavirenz	Sustiva	Dupont Pharmaceuticals (Avid)
MKC442 (Coactinon)	Emivirine		Triangle/Mitsubishi Kasei
AG-1549 (S1153) (on hold)	Capravirine	-	Agouron Pharmaceuticals
PNU-142721			Pharmacia & Upjohn
DPC-961, -963, -083, -08?			DuPont Pharmaceuticals
SJ-3366	Also entry inhibitor?		Samjin Pharmaceuticals
BHAP PNU-87201	Atevirdine	<u> </u>	Upjohn
GW420867X (quinoxaline)	(2 <sup>nd</sup> gen. HBY 097)		Glaxo/Wellcome (Hoechst Bayer)
TMC 120 (R147681)			Tibotec
TMC 125 (R165335)	<del> </del>	. :	Tibotec
R86183	tivirapine	-	Janssen Pharmaceuticals
Calanolide A		1	Sarawak Medichem Pharmaceuticals
Ro 31-8959	Saquinavir-(hgc) Saquinavir-(sgc)	Invirase Fortivase	Hoffman-La Roche
MK-639 (L-735,524)	Indinavir	Crixivar:	Merck Research Laboratories
ABT-538 (A-84538)	Ritonavir	Norvir	Abbott Laboratories
AG1343	Nelfinavir	Viracept	Agouron Pharmaceuticals
141W94 (VX-478)	Amprenavir	Agenerase	Glaxo-Wellcome/Vertex
ABT-378/r	Lopinavir/ritonavir	Kaletra	Abbott Laboratories
BMS 232,632 (aza-peptide)	· · · · · · · · · · · · · · · · · · ·		Bristol-Myers-Squibb
PNU-140690	Tipranavir		Pharmacia & Upjohn
DMP 450 (cyclic urea)	Mozenavir		Triangle/Avid (ph I/II)
TMC 126 (Erickson's compound)			Tibotec
G/W433908 (VX-175)	amprenavir pro-drug		Glaxo/Wellcome/Vertex
L756,423 (on hold)			Merck
PD-178390 (dihydropyrone)			Parke Davis (Boehringer-Ingleheim)
? new candidate			Roche
DPC 681 and 684	*		DuPont Pharmaceuticals
AG-1776 (JE-2147 = KNI-764)			Agouron Pharmaceuticals
Envelope/Receptor Inhibitors		Calendary St.	
T-20 (gp41)	Pentafuside		Trimeris Pharmaceuticals
T-1249 (gp41)		e	Trimeris Pharmaceuticals
D-peptide inhibitor (gp41) small mol.	SCH-C		Schering-Plough
AMD-3100 (CXCR4)	(bicyclam)		AnorMED
AMD-8664 (CXCR4)	(macrocyclam)		AnorMED
ALX40-4C (CXCR4)			U. PA
FP21399	-	ļ	Fuji Pharmaceuticals
PRO 542 (gp120)	CD4lgG2		Progenics Pharmaceuticals
PRO-140 (CCR5)	MAb CCR5		Progenics Pharmaceuticals
T-22 (CXCR4)	(peptide, 18-mer)	<del> </del>	<u> </u>
Met-SDF-1 (CXCR4)		<del> </del>	Takada
TAK 779 (CCR5 antagonist)	<del> </del>	ļ	Takeda Gruphen Sciences
AOP-Rantes (CCR5)	l	<u> </u>	Gryphon Sciences



# Table 4 (Panel 2

Rantes 9-68 (CCR5)			*
CCR5 antagonists	4-(piperidin-1-yl) butane class		Merck
α-Immunokine-NNS03 (CCR5, CXCR4			PhyloMed Corp.
Integrase Inhibitors	71.820°		COMPANY OF THE STATE OF THE STA
AR-177	Zintevir		Aronex Pharmaceuticals
Diketo acids			Merck Research Laboratories
Nucleocapsid:Inhibitors	3. 37743 * 34W	Electric States	7.5
RB 2121	cyclic peptide p7 mimic		(see PNAS 96:4886-4891 (1999))
CI-1012			Achelion Pharmaceuticals
RNase H Inhibitor	<b>20</b>	TON A VIEW TO SERVE T	
SP1093V (BBNH Fe+3 derivative)			(Parniak)

FDA approved drugs are shown in boldface red = discontinued development, blue = not sure about development status



# Table 4 (Panel

Firm

Generic Name (abbreviation) zidovudine, AZT · didanosine, ddl zalcitabine, ddC stavudine, d4T lamivudine, 3TC saquinavir, SQV, hgc saquinavir, SQV, sgc ritonavir, RTV indinavir, IDV nevirapine, NVP nelfinavir, NFV delavirdine, DLV ZDV+3TC efavirenz, EFV abacavir, ABC amprenavir lopinavir/ritonavir ZDV+3TC+ABC

**Brand Name** Retrovir Videx Hivid Zerit **Epivir** Invirase Fortovase Norvir Crixivan Viramune Viracept Rescriptor Combivir Sustiva Ziagen Agenerase

Kaletra

Trizivir

Glaxo Wellcome Bristol Myers-Squibb Hoffman-La Roche **Bristol Myers-Squibb** Glaxo Wellcome Hoffman-La Roche Hoffman-La Roche Abbott Laboratories Merck & Co., Inc. Boehringer Ingelheim Agouron Pharmaceuticals Pharmacia & Upjohn Glaxo Wellcome **DuPont Pharmaceuticals** Glaxo Wellcome Glaxo Wellcome Abbott GlaxoSmithKline

**Date** March 87 October 91 June 92 June 94 November 95 December 95 November 97 March 96 March 96 June 96 March 97 April 97 September 97 September 98 February 99 April 99 September 2000 November 2000

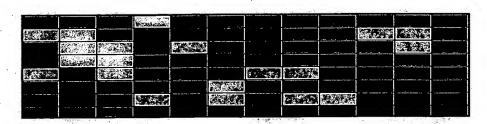
**FDA Approval** 

# 5.

# CORECEPTOR ASSAY SCREEN TEMPLATE

	RLU limit:	100	AY SC	tropism ra		5		CXCR4	CCR5	DUAL			drug 1: l drug 2: /					e
No Drug RLU L83 RLU AMD RLU	R5 34	1 X4 26,471 19,258 32	R5:X4 0.00	R5 14,140 54 12,186	2 X4 55	R5:X4 257.09	R5 46	3 X4 6,849 4,696 40	R5:X4 : ``^^^` 0.01	R5 21,656 27 7,226	4 X4 38,144 25,542 32	R5:X4 0.57	<b>R5</b> 30	5 X4 7,336 5,468 39	R5:X4 0.00	R5 3,988 34 3,664	6 X4 31	R5:X
No Drug RLU L83 RLU AMD RLU	R5 4,552 28 838	13 X4 19,102 9,956 34	<b>R5:X4</b> 0.24	R5 149 40 41	14 X4 226 153 24	R5:X4 0.66	R5 67,389 99 42,295	15 X4 72	R5:X4 935,96	R5 611 30 76	16 X4 19,715 14,985 1,022	R5:X4 0.03	· R5 46	17 X4 3,948 2,953 152	R5:X4 0.01	R5 284 38 25	18 X4 4,330 2,918 48	R5:X
No Drug RLU L83 RLU - AMD RLU	R5 67,828 129 51,146	25 X4 68	R5:X4 997:47	R5 14,982 111 8,580	26 X4 12,020 10,839 3,384	R5:X4 1.25	R5 3,788 59 2,049	27 X4 4,384 3,397 538	R5:X4 0.86	<b>R5</b> 50	28 . X4 . 37 ■	R5:X4	<b>R5</b> 658 32 493	29 X4 242 221 38	R5:X4 2.72	- <b>R5</b> - 231 - 47 - 219	30 X4 35	R5:X
No Drug RLU L63 RLU AMD RLU	R5 100	37 X4 39	R5:X4	R5 3,724 38 1,984	38 X4 2,310 2,656 272	R5:X4 1.61	R5 450 37 206	39 X4 668 463 72	<b>R5:X4</b> 0.67	R5 148 33 139	40 X4 24 ,	R5:X4 6.17	<b>R5</b> 32	41 X4 22	R5:X4	<b>R5</b> 60	42 X4 61	R5:X
No Drug RLU L83 RLU AMD RLU	<b>R5</b> 35	<b>49</b> <b>X4</b> 107 68 34 .	<b>R5:X4</b> 0.33	<b>R5</b> 83	3,502 88	R5:X4	R5 18,099 13,896 16,980	51 X4 8,451 6,220 8,711	R5:X4 2.14	R5 39,257 85 27,832		R5:X4 1033:08	<b>R5</b> 5,413 35 5,043		R5:X4 135.33	<b>R5</b> 97,733 30 48,452		R5:X
No Drug RLU L83 RLU AMD RLU	R5 3,769 29 2,773		R5:X4 ∞-∳ 94.23	<b>R5</b> .786 .39 .797		R5:X4 ₹16.38	R5 340 31 282		R5:X4	<b>R5</b> 5,189 34 5,356	64 X4 43 "	R5:X4 120:67	<b>R5</b> 4,318 28 3,461		<b>R5:X4</b> ≃ 116.70	<b>R5</b> 196 23 184	68 X4 51	R5:X4 3.84
No Drug RLU L83 RLU AMD RLU	<b>R5</b> 391 50 340	73 X4 26	R5:X4 15.04	<b>R5</b> 98	74 X4 38	R5:X4	R5 4,449 .43 3,752	·	R5:X4 - :158.89	<b>R5</b> 4,357 34 906	76 X4 9,102 7,932 36	<b>R5:X4</b> 0.48	R5 6,090 73 4,473	77 X4 105 77 51	R5:X4 58.00	R5 1,886 38 279	78 X4 3,635 2,092 27	R5:X4 0.52
No Drug RLU L83 RLU AMD RLU	R5 510 42 564	85 X4 33	R5:X4 (15:45	<b>R5</b> 979 55 813	86 X4 59	R5:X4 16:59	<b>R5</b> 491 49 376	87 X4 33 :	R5:X4 :14:88	<b>R5</b> 300 29 268	88 X4 3,815 ≧3 3,661 36	R5:X4 №0.08	<b>R5</b> 297 32 256	89 X4 3,615 2,946 30	R5:X4 0.08	<b>R5</b> 39	90 X4 61,594 56,739 40	R5:X4
	<u> </u>	7			8			9	<u>.</u>		10			11			12	
No Drug RLU L83 RLU AMD RLU	R5 30	814 42	R5:X4 → 35 0.02	R5 3	1,128 934 37	R5:X4	R5 42,206 90 33,192		R5:X4 7602.94	<b>R5</b> 45	761 33	R5:X4 ∷G0.04	R5 44,589 60 30,510		<b>R5:X4</b> 459.68	<b>R5</b> 32	29,118 ( 22,279 31	R5:X4 € 0.00
No Drug RLU L83 RLU AMD RLU	R5 100	3,058 34	R5:X4 0.02	R5 11,299 22 8,232		R5:X4 217.29	R5 1,273 26 1,129		R5:X4 ₹ 63.65	<b>R5</b> 7.375 40 3,961	22 X4 10,856 6,455 2,283	<b>R5:X4</b> 0.68	<b>R5</b> 4,397 42 1,656	23 X4 7,130 3,874 1,285	<b>R5:X4</b> 0.62	R5 16,115 68 11,980	X4 50	R5:X4
No Drug RLU L83 RLU AMD RLU	<b>R5</b> 53	31 X4 974 828 95	R5:X4 ₩.0.05	R5 177 32 361	32 X4 32	R5:X4	R5 24,739 31 21,767		R5:X4 749.67	<b>R5</b> 612 48 479	-34 √ X4 45 √	<b>R5:X4</b> ∌ 13.60	<b>R5</b> 2,997 22 925	35 X4 9,695 7,261 35	<b>R5:X4</b> 0.31	<b>R5</b> 416 28 597	36 X4 31	R5:X4 13.42
No Drug RLU L83 RLU AMD RLU	<b>R5</b> 45	207 29	R5:X4	R5 714 31 366		R5:X4 ,2 № 15.87	R5 11,029 18 8,390		R5:X4 5-612:72	R5 2,908 31 2,306		R5:X4 67.63	R5 13,997 73 12,139		R5:X4 ₹,269.17	R5 24,377 59 16,045	48 X4 34	R5:X4 716.97
No Drug RLU L83 RLU AMD RLU	R5 9,254 43 2,219	55 X4 23,846 9,150 40	R5:X4 0.39	<b>R5</b> 5,249 38 784	56 X4 20,393 8,290 38	R5:X4 0.26	<b>R5</b> 470 37 310	57 X4 39 🌣	R5:X4 12:05	R5 19.175 96 19,638	58 X4 126 183 35	R5:X4 152:18	<b>R5</b> 513 35 500	59 X4 31 \$	R5:X4 16.55	R5 3,264 30 3,038	60 X4 28	R5:X4 116.57
No Drug RLU L83 RLU AMD RLU	R5 3,853 39 2,108		R5:X4 250.04	<b>R5</b> 411 22 253		. R5:X4 €.∋∞12:09	R5 7,857 42 4,595		R5:X4 8≼191.63	R5 25,437 35 14,749		R5:X4 669.39	R5 17,443 40 13,708		R5:X4 (,387.62	R5 16,707 104 12,486		R5:X4 439.66
No Drug RLU L83 RLU AMD RLU	R5 263 33 143	79 X4 38	R5:X4 ≈6.92	R5 3,890 44 986	9,577 6,140 45	R5:X4 0.41	R5 2,089 33 1,105	81 X4 1,698 1,224 160	R5:X4 1.23	R5 475 30 159	82 X4 43	R5:X4 11:05	R5 8,475 30 6,862		R5:X4 . ; 223.03	R5 4,107 28 2,571		R5:X4 124.45
No Drug RLU L83 RLU AMD RLU	R5 443 33 451	91 X4 13,452 12,051 51	R5:X4	<b>R5</b> 34	92 X4 128,238 } 85,018 45	R5:X4 №40.00	<b>R5</b> 22	93 X4 62 ■	R5:X4	<b>R5</b> 45	94 X4 . 33	R5:X4	<b>R5</b> 43	95 X4 42	R5:X4	<b>R5</b> 46	96 X4 35	R5:X4

		21	
	R5	X4	R5:X4
no drug			
R5 inhibitor			
X4 inhibitor			
%inhib by R5 inhibitor			
%inhib by X4 inhibitor			





		. 76	
	R5	X4	R5:X4
no drug	총14,982	<b>£12,020</b> .	2007年1
R5 inhibitor	G 3111	10,839	等性。1.数
X4 inhibitor	8,580	3,384	
%inhib by R5 inhibitor	99	10	
%inhib by X4 inhibitor	43	72	Œ.

		95	
	R5	X4	R5:X4
no drug	43	42	
R5 inhibitor			
X4 inhibitor			
%inhib by R5 inhibitor		ĺ	
%inhib by X4 inhibitor		i	



Table 3

Plate 1	Repeat 1	End time 6:39:36 PM	Start temp.	End temp. 21.7							٠,
0.5 CPS (6											
		0070	27.400	7450	20	4200	000	400	1404	440	20400
26648 19248			37406 18972	7158 3478	38 3946	1386 5010	930 46	100 14	1184 11004	112 7474	30488 60
106			32	238	26	976	34	38	48	9736	32
38			16	16	36	298	52	14	54	52	38
122 36			40 40	38 28	20 40	23344 62	15340 32	44 38	156 22	40 44	32 28
22			9858	68	3802	46	11470	1958	42	42	24
30			3846	3390	57858	12620	126186	68	34	38	36
Plate 2	Repeat 1	End time 6:41:51 PM	Start temp.	End temp. 21.6							
0.5 CPS (0 34											
26294	56	6728	38882	7514	24	1048	1326	40	1134	82	27748
18956				4418	4714	5398	58	26	10708	6786	40
30			42	246	44	972	30	28	42	9654	30
40			32	28	86	378	38	22	32	52	30
92 44			36 46	42 46	38 62	24348 92	25446 36	34 44	96 54	22 46	24 48
30			8346	142	3468	30	7684	1438	44	34	42
36		30	3784	3840	65330	14284	130290	56	32	46	34
Plate 3	Repeat 1	End time 6:44:06 PM	Start temp.	End temp. 21.6							
0.5 CPS (0 16											
18590	18	4306	23902	5386	. 30	924	894	32	660	48	23382
8698			14088	2880	3142	3160	40	46	7616	2842	32
30		3542	38	172	34	842	30	32	44	7616	34
28			28	26	66	172	32	22	28	. 36	26
64				28	24	6188	5702	34	120	34	24
16 38				28 68	30 1798	38 62	38 7324	38 1076	44 50	62 42	34 32
32				3138	53670	13088	104608	32	38	50	32
Plate 4	Repeat 1	End time 6:46:20 PM	Start temp.	End temp. 21.8							
	1 CPS)										
0.5 CPS (0 24	OPS)	6:46:20 PM	21.7	21.8	N/A	704	. 974	32	862	. 44	21176
0.5 CPS (0 24 19926	1 CPS) 46	6:46:20 PM 5086	21.7	21.8 5550	N/A 26	704 2956	974 26	32 20	862 5294	44 4906	21176 44
0.5 CPS (0 24	1 CPS) 46 158	6:46:20 PM 5086 42	21.7 27182 15882	21.8	N/A	704 2956 814	974 26 36	32 20 40	862 5294 64	44 4906 6906	
0.5 CPS (0 24 19926 11214 56 32	1 CPS) 46 158 11426 2916	5086 42 3252 556	21.7 27182 15882 82 42	5550 3026 270 30	N/A 26 2694 52 64	2956 814 242	26 36 38	20 40 24	5294 64 36	4906 6906 42	44 32 40
4 0.5 CPS (0 24 19926 11214 56 32 72	1 CPS) 46 158 11426 2916 3220	5086 42 3252 556 7618	27182 15882 82 42 36	5550 3026 270 30 38	N/A 26 2694 52 64 44	2956 814 242 12112	26 36 38 10878	20 40 24 32	5294 64 36 246	4906 6906 42 32	44 32 40 42
4 0.5 CPS (0 24 19926 11214 56 32 72	1 CPS) 46 158 11426 2916 3220 48	5086 42 3252 556 7618	27182 15882 82 42 36 30	5550 3026 270 30 38 28	26 2694 52 64 44 24	2956 814 242 12112 136	26 36 38 10878 30	20 40 24 32 56	5294 64 36 246 34	4906 6906 42 32 24	44 32 40 42 24
4 0.5 CPS (0 24 19926 11214 56 32 72	1 CPS) 46 158 11426 2916 3220 48 38	5086 42 3252 556 7618 22 40	27182 15882 82 42 36 30	5550 3026 270 30 38	N/A 26 2694 52 64 44	2956 814 242 12112	26 36 38 10878	20 40 24 32	5294 64 36 246	4906 6906 42 32	44 32 40 42
4 0.5 CPS (0 24 19926 11214 56 32 72 32 32 22	1 CPS) 46 158 11426 2916 3220 48 38 34 Repeat	5086 42 3252 556 7618 22 40	27182 15882 82 42 36 30 8844 3498 Start temp.	21.8 5550 3026 270 30 38 28 2754 End temp.	N/A  26 2694 52 64 44 24 2386 59808 BarCode	2956 814 242 12112 136 54	26 36 38 10878 30 4956	20 40 24 32 56 1372	5294 64 36 246 34 50	4906 6906 42 32 24 46	44 32 40 42 24 28
4 0.5 CPS (0 24 19926 11214 56 32 72 32 32 22	1 CPS) 46 46 1588 11426 2916 3220 48 38 34 Repeat 1	5086 42 3252 556 7618 22 40 40	27182 15882 82 42 36 30 8844 3498	5550 3026 270 30 38 28 86 2754	N/A  26 2694 52 64 44 24 2386 59808 BarCode	2956 814 242 12112 136 54	26 36 38 10878 30 4956	20 40 24 32 56 1372	5294 64 36 246 34 50	4906 6906 42 32 24 46	44 32 40 42 24 28
4 0.5 CPS (( 24 19926 11214 156 32 72 32 32 22 Plate 5 0.5 CPS (( 38	16CPS)  466 1586 114262 2916 33220 488 344 Repeat 1	5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM	21.7 27182 15882 82 42 36 30 8844 3498 Start temp. 21.9	21.8 5550 3026 270 30 38 86 2754 End temp. 21.9	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34	5294 64 36 246 34 50 40	4906 6906 42 32 24 46 24	44 32 40 42 24 28 18
4  0.5 CPS (( 24  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS (( 38)	1 46 158 11426 2916 3220 48 38 34 Repeat 1	6:46:20 PM  5086 42 3252 556 7618 22 40 40  End time 6:48:35 PM	27.182 15882 82 42 36 30 8844 3498 Start temp. 21.9	21.8 5550 3026 270 30 38 86 2754 End temp. 21.9	26 2694 52 64 44 24 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34	5294 64 36 246 34 50 40	4906 6906 42 32 24 46 24	44 32 40 42 24 28 18
4 0.5 CPS (( 24 19926 11214 56 32 72 32 32 22 Plate 5 0.5 CPS (( 38 38 38	1 CPS)  468 1588 11426 2916 3220 488 384 384 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM	21.7 27182 15882 82 42 36 30 8844 3498 Start temp. 21.9	21.8 5550 3026 270 38 28 86 2754 End temp. 21.9	26 2694 52 64 44 22 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34	5294 64 36 246 34 50 40	4906 6906 42 32 24 46 24	44 32 40 42 24 28 18
4  0.5 CPS (( 24  19926 11214 11214 272 32 32 22  Plate 5  0.5 CPS (( 38  38 26 42	1 46 158 11426 2916 3920 48 34 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40  End time 6:48:35 PM	21.7 27182 15882 82 42 36 30 8844 3498 Start temp. 21.9	21.8 5550 3026 270 30 38 86 2754 End temp. 21.9	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34	5294 64 36 246 34 50 40	4906 6906 42 32 24 46 24	44 32 40 42 24 28 18
4 0.5 CPS (( 24 19926 11214 56 32 72 32 32 22 Plate 5 0.5 CPS (( 38 38 38	1 CPS)  466 1586 11426 2916 3220 486 388 344 Repeat 1 CPS)  28 20 3366 378	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88	21.7 27182 15882 82 42 36 30 8844 3498 Start temp. 21.9	21.8 5550 3026 270 38 28 86 2754 End temp. 21.9 38 39 39 30 30 30 30 30 30 30 30 30 30 30 30 30	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 102 40 42	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34 46 28 34 54 54	5294 64 36 246 34 50 40 30 2298 24 26 36	4906 6906 42 32 24 46 24 34 1290 40 30 46	44 32 40 42 24 28 18
4  0.5 CPS (( 24  19926 11214 156 32 72 32 32 22  Plate 5  0.5 CPS (( 38 38 26 42 28 36 46	1 CPS)  46 158 11426 2916 3920 48 38 34 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44	21.7 27182 15882 82 42 36 30 8844 3498 Start temp. 21.9	21.8 5550 3026 270 38 28 28 2754 End temp. 21.9 38 190 36 34 44 58	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34 46 28 34 54 26 32	5294 64 36 246 34 50 40 30 2298 24 26 36 36	4906 6906 42 32 24 46 24 1290 40 30 46 38	44 32 40 42 24 28 18
4  0.5 CPS ((24)  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS ((38) 38 26 42 28 36 46 22	1 1 CPS) 466 1586 114262 11426	6:46:20 PM  5086 42 3252 556 7618 22 40 40  End time 6:48:35 PM  40 32 420 88 11690 44 52	21.7  27182 15882 82 42 36 30 8844 3498 Start temp. 21.9  30 976 50 32 38 38 38	21.8 5550 3026 270 30 38 86 2754 End temp. 21.9 38 190 36 34 44 58	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 102 40 42 38 34	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34 46 28 34 54 26 32 200	5294 64 36 246 34 50 40 30 2298 24 26 36 36 36	4906 6906 42 32 24 46 24 34 1290 30 46 38 34	44 32 40 42 24 28 18
4  0.5 CPS (c 24  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS (c 38 38 26 42 28 36 46 42 28 36 Plate	1 CPS)  468 1589 11426 2916 33220 488 384 Repeat 1 CPS)  288 20 3260 378 62 22 388 80	6:46:20 PM  5086 42 3252 556 7618 22 40 40  End time 6:48:35 PM  40 32 420 88 11690 44 52 52 End time	21.7  27182 15882 82 42 36 30 8844 3498 Start temp. 21.9  30 976 50 32 38 38 40 40 Start temp.	21.8 5550 3026 270 30 38 86 2754 End temp. 21.9 38 190 36 34 44 58 42 36	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34 46 28 34 54 26 32	5294 64 36 246 34 50 40 30 2298 24 26 36 36	4906 6906 42 32 24 46 24 1290 40 30 46 38	44 32 40 42 24 28 18
4  0.5 CPS (0  24  19926  11214  56  32  72  32  32  22  Plate  5  0.5 CPS (0  38  38  26  42  28  36  46  22  36	11 CPS)  468 1588 114262 2916 3920 48 38 34  Repeat 1 CPS)  288 80  Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 52	21.7  27182 15882 82 42 36 30 8844 3498 Start temp. 21.9  30 976 50 32 38 38 40 40 Start temp.	21.8 5550 3026 270 30 38 28 86 2754 End temp. 21.9 38 190 36 34 44 44 42 36	26 2694 52 64 44 2386 59808 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 102 40 42 38 34	26 36 38 10878 30 4956 65428	20 40 24 32 56 1372 34 46 28 34 54 26 32 200	5294 64 36 246 34 50 40 30 2298 24 26 36 36 36	4906 6906 42 32 24 46 24 34 1290 30 46 38 34	44 32 40 42 24 28 18
4  0.5 CPS (( 24  19926 11214 56 32 72 32 32 22 Plate 5  0.5 CPS (( 38 36 42 28 36 46 22 36  Plate 6  0.5 CPS (( 30  0.5 CPS (	1 CPS)  46 158 11426 2916 33220 48 38 344 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 End time 6:50:50 PM	21.7  27182 15882 82 42 36 30 8844 3498 Start temp. 21.9  30 976 50 32 38 38 40 40 Start temp. 21.8	21.8 5550 3026 270 30 38 28 86 2754 End temp. 21.9 38 38 44 58 42 36	26 2694 52 64 44 238 23808 BarCode N/A 234 58 34 32 32 26 40 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 102 40 42 238 34 52	26 36 38 10878 39 4956 65428 30 24 26 42 42 30 50 50	20 40 24 32 56 1372 34 46 28 34 54 56 32 200 22	5294 64 36 246 34 50 40 30 2298 24 26 36 36 36 40	4906 6906 42 32 24 46 24 1290 40 30 40 38 34 42	44 32 40 42 24 28 18 18
4  0.5 CPS (( 24  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS (( 38 38 26 42 28 36 46 22 36  Plate 6  0.5 CPS (( 30) 26	11 CPS)  46 158 11426 216 216 216 216 216 216 216 216 216 2	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 52 End time 6:50:50 PM	21.7  27182 15882 82 42 36 30 8844 3498 Start temp. 21.9  30 976 50 32 38 38 40 40 Start temp. 21.8	21.8 5550 3026 270 30 38 28 86 2754 End temp. 21.9 38 44 44 58 42 36 End temp. 21.9	26 2694 52 64 44 2386 59808 BarCode N/A 234 58 34 32 32 26 40 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 40 42 38 34 52	26 36 38 10878 30 4956 65428 30 24 26 42 42 42 30 50 54	20 40 24 32 56 1372 34 46 28 34 54 26 32 200 22	5294 64 36 246 34 50 40 30 2298 24 26 36 36 40	4906 6906 42 32 24 46 24 1290 40 30 46 38 34 42	44 32 40 42 24 28 18 18
4 0.5 CPS (( 24 19926 11214 56 32 22 Plate 5 0.5 CPS (( 38 38 46 42 28 86 46 0.5 CPS (( 30 0.5 CPS (	1 CPS)  468 158 158 11426 2916 3220 48 384 384 Repeat 1 CPS)  288 20 222 238 80 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 52 End time 6:50:50 PM	21.7  27182 15882 82 42 36 30 8844 3498  Start temp. 21.9  30 976 50 32 38 38 40 40  Start temp. 21.8	21.8 5550 3026 270 38 28 86 2754 End temp. 21.9 38 42 36 End temp. 21.9	N/A  26 2694 52 64 44 2386 59808  BarCode N/A  234 58 34 32 32 32 32 40  BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 102 40 42 38 34 52	26 36 38 10878 30 4956 65428 30 24 26 42 42 30 50 54	20 40 24 32 56 1372 34 46 28 34 54 56 32 200 22	5294 64 36 246 34 50 40 30 2298 24 26 36 36 36 36 36 36 2268	4906 6906 42 32 24 46 24 1290 40 30 40 38 34 42	44 32 40 42 24 28 18 18
4  0.5 CPS (( 24  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS (( 38 38 26 42 28 36 46 22 36  Plate 6  0.5 CPS (( 30) 26	1 CPS)  468 1588 11426 2916 3140 488 388 344 Repeat 1 CPS)  288 202 3260 378 622 223 3880 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 End time 6:50:50 PM	21.7  27182 15882 82 42 36 30 8844 3498  Start temp. 21.9  30 976 50 32 38 38 40 40  Start temp. 21.8	21.8 5550 3026 270 30 38 28 86 2754 End temp. 21.9 38 44 44 58 42 36 End temp. 21.9	26 2694 52 64 44 238 6 59808 BarCode N/A 234 58 34 32 32 26 40 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 40 42 38 34 52	26 36 38 10878 30 4956 65428 30 24 26 42 42 42 30 50 54	20 40 24 32 56 1372 34 46 28 34 54 26 32 200 22	5294 64 36 246 34 50 40 30 2298 24 26 36 36 40	4906 6906 42 32 24 46 6 24 34 1290 40 30 46 38 34 42	44 32 40 42 24 28 18 18 22 26 24 48 42 12 36 36
4  0.5 CPS (c 24  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS (c 38 36 46 46 42 28 36 Plate 6  0.5 CPS (c 30 26 42 36 22 36	11 CPS)  46 158 158 158 11426 159 1426 159 1426 159 1426 159 159 159 159 159 159 159 159 159 159	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 End time 6:50:50 PM	21.7  27182 15882 82 42 36 30 8844 3498  Start temp. 21.9  30 976 50 32 38 38 40 40  Start temp. 21.8	21.8  5550 3026 270 38 28 86 2754  End temp. 21.9  38 42 36 End temp. 21.9	N/A  26 2694 52 64 44 234 2386 59808  BarCode N/A  234 58 34 32 32 32 32 32 34 40 34 34 34 34 34 34 34 34 34 34 34 34 34	2956 814 242 12112 136 54 11014 46 46 46 102 40 42 38 34 52 88 83 83 83 83	26 38 10878 30 4956 65428 30 24 26 42 42 30 50 54	20 40 24 32 56 1372 34 46 28 34 54 26 32 200 22	5294 64 36 246 34 50 40 30 2298 24 26 36 36 36 36 36 36 36 36 36 34 36 36 36 36 36 36 36 36 36 36 36 36 36	4906 6906 42 32 24 46 6 24 34 1290 40 30 46 38 34 42	44 32 40 42 24 28 18 18 22 26 24 48 42 12 36 36 36
4  0.5 CPS (0  24  19926  11214  56  32  72  32  32  22  Plate  5  0.5 CPS (0  38  38  46  42  28  36  46  20  30  26  42  28  36  26  42  28  36  28  36  28  36  36  28  36  36  28  36  36  38	11 CPS)  468 1588 11426 2916 3148 348 344 Repeat 1 CPS)  288 20 3260 378 62 22 388 80 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 End time 6:50:50 PM  40 32 656 56 5732 36	21.7  27182 15882 82 42 36 30 8844 3498  Start temp. 21.9  30 976 50 32 38 38 40 40  Start temp. 21.8	21.8 5550 3026 270 30 38 28 86 2754 End temp. 21.9 38 40 41 40 114 40 18 42 36	26 2694 52 64 44 238 6 59808 BarCode N/A 234 58 34 32 32 26 40 8 BarCode N/A	2956 814 242 12112 136 54 11014 46 46 102 40 42 38 34 52	26 38 10878 30 4956 65428 30 24 26 42 30 50 54	20 40 24 32 56 1372 34 46 28 34 54 26 32 200 22	5294 64 36 246 34 50 40 40 30 2298 24 26 36 36 36 36 40	4906 6906 42 32 24 46 24 1290 40 30 46 38 34 42	22 24 28 18 22 26 24 48 42 12 36 36 36
4  0.5 CPS (c 24  19926 11214 56 32 72 32 32 22  Plate 5  0.5 CPS (c 38 36 46 46 42 28 36 Plate 6  0.5 CPS (c 30 26 42 36 22 36	1 CPS)  46 158 11426 2916 33220 48 334 Repeat 1 CPS)  28 20 3360 378 62 22 38 80 Repeat 1 CPS)	6:46:20 PM  5086 42 3252 556 7618 22 40 40 End time 6:48:35 PM  40 32 420 88 11690 44 52 52 End time 6:50:50 PM  40 32 656 5732 36	21.7  27182 15882 82 42 36 30 8844 3498 Start temp. 21.9  30 976 50 32 38 40 40 Start temp. 21.8	21.8  5550 3026 270 38 28 86 2754  End temp. 21.9  38 42 36 End temp. 21.9	N/A  26 2694 52 64 44 2386 59808  BarCode N/A  234 58 34 32 32 26 40  BarCode N/A	2956 814 242 12112 136 54 11014 46 46 46 102 40 42 38 34 52 88 83 83 83 83	26 38 10878 30 4956 65428 30 24 26 42 42 30 50 54	20 40 24 32 56 1372 34 46 28 34 54 26 32 200 22	5294 64 36 246 34 50 40 30 2298 24 26 36 36 36 36 36 36 36 36 36 34 36 36 36 36 36 36 36 36 36 36 36 36 36	4906 6906 42 32 24 46 6 24 34 1290 40 30 46 38 34 42	44 32 40 42 24 28 18 18 22 26 24 48 42 12 36 36 36





Plate 1	Repeat 1	End time #######	Start temp. 21.7	End temp							
0.5 CPS (0 32											
24	14218	56	21586	28	4034	36	52	42088	40	43332	38
4780				48	326	28	12022	1288	7198	4314	17856
69452			44	792	180	50	182	25292	718	3572	424
72			128	44	66	30	900	11984	3194	16106	23794
30			40438	4882	105946	8466 3546	4934 504	470 8164	20386 22214	548 15146	3376 19592
3420 344		344 5344	6268 5330	5012 6710	170 1880	3346	4286	2112	466	7752	4078
580			318	302	40	414	32	20	52	48	42
				*							
Ptate 2	Repeat 1	End time ########	Start temp. 21.9	End temp. 21.9							
0.5 CPS (0 22											
44	14062	36	21726	32	3942	24	46	42324	50	45846	26
4324				44	242	172	10576	1258	7552	4480	14374
66204			56	524	282	56	172	24186	506	2422	408
128			168	20	54	60	528	10074	2622	11888	24960
40			38076 4110	5944 3624	89520 222	10042 4160	5564 318	470 7550	17964 28660	478 19740	3152 13822
4118 438			3384	5470	1892	188	3494	2066	484	9198	4136
440			282	292	38	472	36	24	38	38	50
Plate 3	Repeat 1	End time ########	Start temp. 21.9		BarCode N/A						
0.5 CPS (0 36											
36	38	28	28	38	28	36	42	114	40	60	46
32	34	80	26	16	36	30	18	26	30	48	80
126			42	30	46	22	26	32	58	8	28
26			38	34	20	18	34	24	36	100	60
28			76	32	26	42	52	36	106	34	24
34 38			24 36	32 80	18 50	38 38	18 44	36 34	38 38	50 30	58 28
40		38	30	24	22	38	36	34	36	22	26
Plate 4	Repeat 1	End time	Start temp.							,	
0.5 CPS (0	1 (PS)	End time ########	Start temp. 21.9		BarCode N/A					٠	
4	1 (PS)										
0.5 CPS (0	1 CPS)	#########				18	32	66	30	60	34
4 0.5 CPS (0 16 24 24	1 CPS) 70 46	######## 30 118	21.9 26 34	22 26 26	N/A 40 40	34	26	26	50	36	56
4 0.5 CPS (0 16 24 24 132	70 46 116	30 118 84	21.9 26 34 34	26 26 34	N/A 40 40 48	34 34	26 38	26 30	50 38	36 36	56 28
4 0.5 CPS (0 16 24 24 132 32	70 46 116 30	30 118 84 32	21.9 26 34 34 28	26 26 26 34 26	N/A 40 40 48 40	34 34 46	26 38 28	26 30 12	50 38 26	36 36 46	56 28 58
24 24 132 32 34	70 46 116 30 84	30 118 84 32 12036	21.9 26 34 34 28 94	26 26 26 34 26 38	N/A 40 40 48 40 34	34 34 46 44	26 38 28 24	26 30 12 38	50 38 26 86	36 36 46 36	56 28 58 36
4 0.5 CPS (0 16 24 24 132 32 34 24	70 46 116 30 84 28	30 118 84 32 12036 42	21.9 26 34 34 28 94 44	26 26 26 34 26 38 24	N/A 40 40 48 40 34 28	34 34 46 44 40	26 38 28	26 30 12	50 38 26	36 36 46	56 28 58
24 24 132 32 34	70 46 116 30 84 28 24	30 118 84 32 12036 42	21.9 26 34 34 28 94	26 26 26 34 26 38	N/A 40 40 48 40 34	34 34 46 44	26 38 28 24 26	26 30 12 38 48	50 38 26 86 32	36 36 46 36 30	56 28 58 36 150
4 0.5 CPS (0 16 24 24 132 32 34 24 62 44	70 46 116 30 84 28 24 80 Repeat	30 118 84 32 12036 42 58 60 End time	21.9 26 34 28 94 44 32 28 Start temp.	26 26 26 34 26 38 24 66 40 End temp.	N/A  40 40 48 40 34 28 26 28 BarCode	34 34 46 44 40 28	26 38 28 24 26 44	26 30 12 38 48 32	50 38 26 86 32 22	36 36 46 36 30 30	56 28 58 36 150 28
4 0.5 CPS (C 16 24 132 32 34 24 62 44 Plate 5	70 46 116 30 84 28 24 80 Repeat 1	30 118 84 32 12036 42 58 60	21.9 26 34 34 28 94 44 32 28	26 26 26 34 26 38 24 66 40 End temp.	N/A 40 40 48 40 34 28 26	34 34 46 44 40 28	26 38 28 24 26 44	26 30 12 38 48 32	50 38 26 86 32 22	36 36 46 36 30 30	56 28 58 36 150 28
0.5 CPS (0.16 14 14 14 14 14 14 14 14 14 14 14 14 14	70 46 116 30 84 28 24 80 Repeat 1	30 118 84 32 12036 42 58 60 End time	21.9 26 34 28 94 44 32 28 Start temp.	26 26 26 34 26 38 24 66 40 End temp.	N/A  40 40 48 40 34 28 26 28 BarCode	34 34 46 44 40 28	26 38 28 24 26 44	26 30 12 38 48 32	50 38 26 86 32 22	36 36 46 36 30 30	56 28 58 36 150 28
4 0.5 CPS (C 16 24 132 32 34 24 62 44 Plate 5	70 46 116 30 84 80 Repeat 1	30 118 84 32 12036 60 End time	21.9 26 34 34 28 94 44 32 28 Start temp.	26 26 26 34 26 38 24 66 40 End temp.	40 40 48 40 34 28 26 28 BarCode N/A	34 34 46 44 40 28	26 38 28 24 26 44	26 30 12 38 48 32	50 38 26 86 32 22	36 36 46 36 30 30	56 28 58 36 150 28 28
4 0.5 CPS (C 16 24 24 132 34 24 62 44 Plate 5 0.5 CPS (C 38 38 38	70 46 116 300 84 28 24 80 Repeat 1 CPS)	30 118 84 32 12036 42 12036 60 End time ########	21.9  26 34 34 28 94 44 32 28 Start temp. 22	26 26 26 34 24 64 40 End temp. 22	N/A  40 40 48 40 34 28 26 28  BarCode N/A	34 34 46 44 40 28 28 28	26 38 28 24 26 44 34	26 30 12 38 48 32 32 32	50 38 26 86 32 22 36	36 36 46 36 30 30 18	56 28 58 36 150 28 28
4 0.5 CPS (C 16 24 132 32 34 24 62 44 Plate 5 0.5 CPS (C 34 38 762 52058	70 46 116 30 84 80 80 Repeat 1 CPS)	30 118 84 32 12036 60 End time ########	21.9  26 34 34 28 94 44 32 28 Start temp. 22	26 26 34 26 38 24 66 40 End temp. 22	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168	34 34 46 44 40 28 28 28	26 38 28 24 26 44 34 40 8416 340	26 30 12 38 48 32 32 32	50 38 26 86 32 22 36	36 36 46 36 30 30 18 30628 1598 1046	56 28 58 36 150 28 28 28
4 0.5 CPS (C 16 24 132 32 32 34 44 Plate 5 0.5 CPS (C 34 762 52058 1066	70 46 116 30 84 80 80 PS)  Repeat 1  CPS)	300 118 84 32 12036 60 End time ####### 26 39888 2524 172	21.9  26 34 34 28 94 44 32 28  Start temp. 22	26 26 34 26 38 24 66 40 End temp. 22	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168 38	34 34 46 44 40 28 28 28	26 38 28 24 26 44 34 40 8416 340 444	26 30 12 38 48 32 32 32 29548 1262 22410 7478	50 38 26 86 32 22 36 40 409 534 2458	36 36 46 46 30 30 18 30628 1598 1046	56 28 58 36 150 28 28 28 34 12372 512 15470
4 0.5 CPS (0.5 CPS) (1.6 C	70 46 116 300 84 28 24 80 Repeat 1 CPS)	30 118 84 322 12036 42 58 60 End time ######## 266 39888 2524 172 16428	21.9  26 34 34 28 94 44 32 28 Start temp. 22	26 26 26 34 26 38 24 66 40 End temp. 22	N/A  40 40 48 40 34 28 26 6 8 BarCode N/A  3960 30 168 38 45094	34 34 46 44 40 28 28 44 36 32 30 2092	26 38 28 24 26 44 34 40 8416 340 444 630	26 30 12 38 48 32 32 32 29548 1262 22410 7478 334	50 38 26 86 32 22 36 40 4096 534 2458 17130	36 36 46 46 30 30 30 18 30628 1598 1046 10024 388	56 28 58 36 150 28 28 34 12372 512 15470 2730
4 0.5 CPS (0.16 24 132 32 34 24 62 44 Plate 5 0.5 CPS (0.34 38 7626 52058 106 30 2498	70 46 116 30 84 80 80 Peps)  11132 48 8050 2080 46 732	30 118 84 32 12036 42 58 60 End time ####### 266 39888 2524 172 16428 358	21.9  26 34 34 28 94 44 32 28  Start temp. 22  6696 88 60 170 25792 5044	26 26 34 26 38 24 66 40 End temp. 22 34 40 450 38 4240 3236	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168 38 45094 202	34 34 46 64 40 28 28 28 44 36 32 30 2092 2124	26 38 28 24 26 44 34 40 8416 340 444 630 292	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736	36 36 46 36 30 30 18 30628 1598 1046 10024 388 13012	56 28 58 36 150 28 28 34 12372 512 15470 2730 12386
4 0.5 CPS (0.5 CPS) (1.6 C	70 466 1166 30 844 80 Repeat 1 CPS) 11132 48 80550 2080 46 732 30	300 1188 844 322 12036 600 End time ######## 266 39888 2524 172 16428 3588 3586 3986	21.9  26 34 34 28 94 44 32 28  Start temp. 22  6696 88 60 170 25792 5044	26 26 26 34 26 38 24 66 40 End temp. 22	N/A  40 40 48 40 34 28 26 6 8 BarCode N/A  3960 30 168 38 45094	34 34 46 44 40 28 28 44 36 32 30 2092	26 38 28 24 26 44 34 40 8416 340 444 630	26 30 12 38 48 32 32 32 29548 1262 22410 7478 334	50 38 26 86 32 22 36 40 4096 534 2458 17130	36 36 46 46 30 30 30 18 30628 1598 1046 10024 388	56 28 58 36 150 28 28 34 12372 512 15470 2730
4 0.5 CPS (C 16 24 132 32 34 24 62 44 Plate 5 0.5 CPS (C 34 38 762 52058 106 30 2498 290 456	70 466 1166 30 844 80 80 80 2080 466 7323 30 816	300 118 84 32 12036 60 End time 266 39888 2524 172 16428 3586 3986 438 End time	21.9  26 34 34 28 94 44 32 28 Start temp. 22  6696 88 60 170 25792 5044 886 294 Start temp.	26 26 26 34 24 66 40 End temp. 22 34 450 38 4240 3236 4584 260 End temp.	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168 38 45094 202 240 44  BarCode	34 34 46 44 40 28 28 28 44 36 32 30 2092 2124 110	26 38 28 24 26 44 34 40 8416 340 444 630 292 292	26 30 12 38 48 32 32 32 29548 1262 22410 7478 334 4806 1286	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162	36 36 46 36 30 30 18 30628 1598 1046 10024 388 13012 6768	56 28 58 36 150 28 28 34 12372 512 15470 2730 12386 2204
4 0.5 CPS (C 16 244 132 32 34 24 62 44 Plate 5 0.5 CPS (C 34 38 762 52058 106 30 2498 220 456	10PS)  70 46 116 30 84 28 24 80 Repeat 1 CPS)  11132 48 8050 2080 46 7322 30 816 Repeat 1 CPS)	30 118 84 32 12036 42 58 60 End time ####### 26 39888 2524 172 16428 358 3986 438	21.9  26 34 34 28 94 44 32 28  Start temp. 22  6696 88 60 170 25792 5044 886 294	26 26 34 26 38 24 66 40 End temp. 22 34 40 450 38 4240 3236 4584 260	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168 38 45094 202 240 44  BarCode	34 34 46 44 40 28 28 28 44 36 32 30 2092 2124 110	26 38 28 24 26 44 34 40 8416 340 444 630 292 292	26 30 12 38 48 32 32 32 29548 1262 22410 7478 334 4806 1286	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162	36 36 46 36 30 30 18 30628 1598 1046 10024 388 13012 6768	56 28 58 36 150 28 28 34 12372 512 15470 2730 12386 2204
4 0.5 CPS (( 16 244 132 32 34 24 62 44 Plate 5 0.5 CPS (( 34 38 762 52058 106 30 2498 2200 456 Plate 6 0.5 CPS (( 32	70 46 116 30 84 28 24 80 8 Repeat 1 CPS)	30 118 84 32 12036 42 56 60 End time ######## 26 39888 2524 172 16428 3986 438 End time ########	21.9  26 34 34 28 94 44 32 28 Start temp. 22  6696 88 60 170 25792 5044 886 294 Start temp.	26 26 34 24 66 40 End temp. 22 34 40 450 3236 4584 260 End temp. 22.1	A0 40 40 34 28 26 8 BarCode N/A 3960 30 168 38 45094 44 BarCode N/A	34 34 46 64 40 28 28 28 44 36 32 30 2092 2124 110 524	26 38 28 24 26 44 34 34 40 8416 340 444 630 292 940 40	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1266 34	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162 22	36 36 46 36 30 30 18 30628 1598 1046 10024 388 13012 6768 38	56 28 58 36 150 28 28 28 34 12372 512 15470 2730 12386 2204 20
4 0.5 CPS (C 34 132 34 24 24 24 24 24 24 24 24 24 24 24 24 24	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	######################################	21.9  26 34 34 28 94 44 32 28  Start temp. 22  6696 88 60 170 25792 5044 886 294  Start temp. 22	26 26 34 26 38 24 66 40 End temp. 22 334 40 450 38 4240 3236 4584 260 End temp. 22.1	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168 38 45094 202 240 44  BarCode N/A	34 34 46 64 40 28 28 28 44 36 32 30 2092 2124 110 524	26 38 28 24 26 44 34 40 8416 340 444 630 292 940 40	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1286 34	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162 22	36 36 46 36 30 30 18 30628 1598 1046 10024 388 3012 6768 38	56 28 58 36 150 28 28 34 12372 512 15470 2730 2730 2204 20
4 0.5 CPS (0 16 24 24 132 32 32 34 62 44 62 44 62 62 62 62 62 62 62 62 62 62 62 62 62	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	300 1188 844 32 12036 60 End time ########  266 39888 2524 172 16428 3586 438 End time #########	21.9  26 34 34 28 94 44 32 25 32 6696 88 60 170 25792 5044 886 294 Start temp. 22	26 26 34 26 38 24 66 40 End temp. 22 38 4240 3236 4584 260 End temp. 22.1	N/A  40 40 48 40 34 28 26 28  BarCode N/A  3960 30 168 38 45094 202 240 44  BarCode N/A	34 34 46 44 40 28 28 28 44 36 32 20 2092 2124 110 524	26 38 28 24 26 44 34 40 8416 340 444 630 292 940 40	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1286 34	50 38 26 86 32 22 23 36 40 4096 534 2458 17130 13736 162 22	36 36 36 30 30 30 18 30628 1598 1046 10024 388 13012 6768 38	56 28 58 36 150 28 28 28 34 12372 512 15470 2730 12386 2204 20
4 0.5 CPS (( 168 244 132 32 344 44	1 10PS)  70 46 116 30 84 28 24 80 Repeat 1 CPS)  11132 48 8050 2080 46 732 30 816 Repeat 1 CPS)	######################################	21.9  26 34 34 28 94 44 32 28 Start temp. 22  6696 88 60 170 25792 5044 886 294 Start temp. 22	26 26 34 24 64 64 80 21 22 32 34 40 450 3236 4584 260 End temp. 22.1	N/A  40 40 48 40 34 28 26 8 BarCode N/A  3960 30 168 38 45094 202 240 44  BarCode N/A  3368 8 20 2770	34 34 46 64 40 28 28 28 44 36 32 30 2092 2124 110 524	26 38 28 24 26 44 34 34 40 8416 340 444 630 292 940 40 8048 382	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1266 34	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162 22	36 36 36 30 30 30 18 30628 1598 1046 10024 388 13012 6768 38	56 28 58 36 150 28 28 34 12372 512 15470 2730 2730 2204 20
4 0.5 CPS (0 16 24 24 132 32 32 34 62 44 62 44 62 62 62 62 62 62 62 62 62 62 62 62 62	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	######################################	21.9  26 34 34 28 94 44 32 25 Start temp. 22  6696 88 60 170 25792 5044 886 294 Start temp. 22	26 26 34 26 38 24 66 40 End temp. 22 38 4240 3236 4584 260 End temp. 22.1	N/A  40 40 48 40 34 28 26 28 BarCode N/A  3960 30 168 38 45094 202 240 44  BarCode N/A  3368 20 277 46	34 34 46 44 40 28 28 28 44 36 32 20 2092 2124 110 524	26 38 28 24 26 44 34 40 8416 340 444 630 292 940 40	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1286 34	50 38 26 86 32 22 23 36 40 4096 534 2458 17130 13736 162 22	36 36 36 30 30 30 18 30628 1598 1046 10024 388 13012 6768 38	56 28 58 36 150 28 28 34 12372 512 15470 2730 12386 2204 20
4 0.5 CPS (C 34 132 34 24 62 44 132 35 24 88 290 456 Plate 6 0.5 CPS (C 32 44 50234 50244 50234 50244 50244 50244 50244 50244	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	######################################	21.9  26 34 34 28 94 44 32 28 Start temp. 22  6696 88 60 170 25792 5044 886 294 Start temp. 22	22 26 26 34 26 38 24 66 40 22 22 34 40 450 38 4240 3236 4584 260 End temp. 22.1	N/A  40 40 48 40 34 28 26 28 BarCode N/A  3960 30 168 38 45094 2002 240 44 BarCode N/A  3368 20 2770 46	34 34 46 44 40 28 28 28 44 36 32 30 2092 2124 110 524	26 38 28 24 26 44 34 40 8416 340 444 630 292 940 40 8048 382 288	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1286 34	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162 22	36 36 36 36 30 30 18 30628 1598 1046 10024 338 30112 6768 38	56 28 58 36 150 28 28 34 12372 512 15470 2730 12386 2204 20
4 0.5 CPS (C 150 CPS (	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	######################################	21.9  26 34 34 28 94 44 32 28  Start temp. 22  6696 88 60 170 25792 5044 886 2947 Start temp. 22	26 26 34 26 38 24 66 45 45 424 2326 4584 260 End temp. 22.1	N/A  40 40 48 40 34 28 26 8 BarCode N/A  3960 30 168 38 45094 44  BarCode N/A  3368 20 240 44  BarCode N/A	34 34 46 44 40 28 28 28 44 36 32 30 2092 2124 110 524	26 38 28 24 26 44 34 40 8416 340 444 630 292 940 40 8048 382 288 938	26 30 12 38 48 32 32 29548 1262 22410 7478 334 4806 1286 34	50 38 26 86 32 22 36 40 4096 534 2458 17130 13736 162 22	36 36 36 30 30 30 18 30628 1598 1046 10024 388 13012 6768 38	56 28 58 36 150 28 28 28 34 12372 512 15470 2730 12386 2204 20

										1	*		K													
	29,118	22	31	ğ	28	88	33	32		22,279	38	33	33,	33	53	90	52		31	33	93	40	47	24	36	27
	97	7,130	9,695	25	31	45	38	45		46	3,874	7,261	33	33	43	4	37		37	1,285	32	78	42	35	27	4
	1,159	10,856	42	£	126	88	43	ဗ		761	6,455	Z	35	183	8	20	33		33	2,283	4	8	32	88	98	33
	2	20	33	8	38	41	1,698	62		32	33	36	ខ	33	47	1,224	33		4	53	8	43	38	37	160	17
	1,128	25	35	42	20,393	¥	9,577	128,238		934	83	ဗ္ဗ	35	8,290	¥	6,140	85.018		37	35	78	9	88	88	42	42
	1,217	5,204	974	338	3,846	77	38	3,452		814	3,058	828	202	9,150	87	28	2,051		45	8	92	23	4	æ	83	51
		4,330								78	2,918	43	92	发	27	2,092	56,739 1		142	48	¥	36	33	56	27	9
		3,948			_												2,946 5		39	152	88	56	43	44	51	30
								3,815		25,542									32	1,022	49	8	32	8	36	36
	-	. 22						_			_	_	_	6,220	٠.	_			9	35	538	72	8,711	9	39	22
		526	_	_	_		_	_						3,502					78	54	3,384	272	88	22	31	69
										19,258		•												4		
*	No Drug 26,471	19,			_				L83	•								AMD		_			_			•
	32	16,115	416	24,377	3,264	16,707	4,107	46		40	89	28	88	30	5	8	27							12,486		
				3	5	443	175	43		8	42	2	73	32	<del>4</del>	ဗ္ဂ	20		6	ဖွ	'n	ത	0	8	62	4
	44,589	4,397	2,997	13,99	٠,	17,	8,					2							30,5	1,6	925	12,13	S	13,7	8,9	
		7,375 4,397								35				96	35	30					_			14,749 13,70	_	_
	45		612	2,908	19,175	25,437	475	45			4	48	31				36		4	3,961	479	2,306	19,638	_	159	28
	42,206 45	7,375	24,739 612	11,029 2,908	470 19,175	7,857 25,437	2,089 475	22 45		06	26 40	31 48	18 31	96	42	33	33 36		33,192 44	1,129 3,961	21,767 479	8,390 2,306	310 19,638	14,749	1,105 159	27 28
	49 42,206 45	1,273 7,375	177 24,739 612	714 11,029 2,908	5,249 470 19,175	1 411 7,857 25,437	3,890 2,089 475	34 22 45		37 90	22 26 40	32 31 48	31 18 31	37 96	22 42	44 33	35 33 36		40 33,192 44	8,232 1,129 3,961	361 21,767 479	366 8,390 2,306	784 310 19,638	4,595 14,749	986 1,105 159	35 27 28
	30 49 42,206 45	11,299 1,273 7,375	53 177 24,739 612	45 714 11,029 2,908	9,254 5,249 470 19,175	3,853 411 7,857 25,437	263 3,890 2,089 475	443 34 22 45		27 37 90	32 22 26 40	28 32 31 48	32 31 18 31	38 37 96	39 22 42	33 44 33	33 35 33 36		34 40 33,192 44	30 8,232 1,129 3,961	26 361 21,767 479	30 366 8,390 2,306	2,219 784 310 19,638	2,108 253 4,595 14,749	143 986 1,105 159	451 35 27 28
	3,988 30 49 42,206 45	284 100 11,299 1,273 7,375	231 53 177 24,739 612	60 45 714 11,029 2,908	97,733 9,254 5,249 470 19,175	196 3,853 411 7,857 25,437	1,886 263 3,890 2,089 475	39 443 34 22 45		34 27 37 90	38 32 22 26 40	47 28 32 31 48	30 32 31 18 31	43 38 37 96	23 39 22 42	38 33 44 33	25 33 35 33 36		3,664 34 40 33,192 44	25 30 8,232 1,129 3,961	219 26 361 21,767 479	42 30 366 8,390 2,306	48,452 2,219 784 310 19,638	253 4,595 14,749	279 143 986 1,105 159	35 451 35 27 28
	30 3,988 30 49 42,206 45	46 284 100 11,299 1,273 7,375	658 231 53 177 24,739 612	32 60 45 714 11,029 2,908	5,413 97,733 9,254 5,249 470 19,175	4,318 196 3,853 411 7,857 25,437	6,090 1,886 263 3,890 2,089 475	997 39 443 34 22 45		32 34 27 37 90	21 38 32 22 26 40	32 47 28 32 31 48	30 30 32 31 18 31	30 43 38 37 96	28 23 39 22 42	73 38 33 44 33	32 25 33 35 33 36		36 3,664 34 40 33,192 44	45 25 30 8,232 1,129 3,961	493 219 26 361 21,767 479	33 42 30 366 8,390 2,306	5,043 48,452 2,219 784 310 19,638	3,461 184 2,108 253 4,595 14,749	4,473 279 143 986 1,105 159	256 35 451 35 27 28
	21,656 30 3,988 30 49 42,206 45	611 46 284 100 11,299 1,273 7,375	50 658 231 53 177 24,739 612	148 32 60 45 714 11,029 2,908	39,257 5,413 97,733 9,254 5,249 470 19,175	5,189 4,318 196 3,853 411 7,857 25,437	4,357 6,090 1,886 263 3,890 2,089 475	300 297 39 443 34 22 45		27 32 34 27 37 90	30 21 38 32 22 26 40	38 32 47 28 32 31 48	33 30 30 32 31 18 31	85 35 30 43 38 37 96	34 28 23 39 22 42	34 73 38 33 44 33	29 32 25 33 35 33 36		7,226 36 3,664 34 40 33,192 44	5 76 45 25 30 8,232 1,129 3,961	53 493 219 26 361 21,767 479	33 42 30 366 8,390 2,306	) 27,832 5,043 48,452 2,219 784 310 19,638	2 5,356 3,461 184 2,108 253 4,595 14,749	2 906 4,473 279 143 986 1,105 159	3 268 256 35 451 35 27 28
	46 21,656 30 3,988 30 49 42,206 45	67,389 611 46 284 100 11,299 1,273 7,375	3,788 50 658 231 53 177 24,739 612	450 148 32 60 45 714 11,029 2,908	18,099 39,257 5,413 97,733 9,254 5,249 470 19,175	340 5,189 4,318 196 3,853 411 7,857 25,437	4,449 4,357 6,090 1,886 263 3,890 2,089 475	491 300 297 39 443 34 22 45		29 27 32 34 27 37 90	99 30 21 38 32 22 26 40	59 38 32 47 28 32 31 48	37 33 30 30 32 31 18 31	35 30 43 38 37 96	31 34 28 23 39 22 42	43 34 73 38 33 44 33	49 29 32 25 33 35 33 36		32 7,226 36 3,664 34 40 33,192 44	42,295 76 45 25 30 8,232 1,129 3,961	2,049 53 493 219 26 361 21,767 479	206 139 33 42 30 366 8,390 2,306	16,980 27,832 5,043 48,452 2,219 784 310 19,638	282 5,356 3,461 184 2,108 253 4,595 14,749	3,752 906 4,473 279 143 986 1,105 159	376 268 256 35 451 35 27 28
\$\$	Drug 34 14,140 46 21,656 30 3,988 30 49 42,206 45	149 67,389 611 46 284 100 11,299 1,273 7,375	14,982 3,788 50 658 231 53 177 24,739 612	3,724 450 148 32 60 45 714 11,029 2,908	83 18,099 39,257 5,413 97,733 9,254 5,249 470 19,175	786 340 5,189 4,318 196 3,853 411 7,857 25,437	98 4,449 4,357 6,090 1,886 263 3,890 2,089 475	979 491 300 297 39 443 34 22 45	L83	29 27 32 34 27 37 90	40 99 30 21 38 32 22 26 40	111 59 38 32 47 28 32 31 48	38 37 33 30 30 32 31 18 31	115 13,896 85 35 30 43 38 37 96	39 31 34 28 23 39 22 42	31 43 34 73 38 33 44 33	55 49 29 32 25 33 35 33 36		12,186 32 7,226 36 3,664 34 40 33,192 44	41 42,295 76 45 25 30 8,232 1,129 3,961	8,580 2,049 53 493 219 26 361 21,767 479	1,984 206 139 33 42 30 366 8,390 2,306	37 16,980 27,832 5,043 48,452 2,219 784 310 19,638	2 5,356 3,461 184 2,108 253 4,595 14,749	47 3,752 906 4,473 279 143 986 1,105 159	813 376 268 256 35 451 35 27 28



# T20 Resistance Mutations

SDM Virus	T20 Sens.a	T20 FCb
HXB2 G I V		1.0
NL4-3 G I V	S	5.2
NL4-3 D I V	S	12.8
NL4-3 G I M	S	33.0
NL4-3 S I V	S	74.2
NL4-3 D I M	R	113.0
NL4-3 S I M	R	227.4
NL4-3 D T V	R	>281.8
JRCSF G I V		2.1
JRCSF D I V		104.0

<sup>&</sup>lt;sup>a</sup> Rimsky et al., J. Virol. 72(2):986-993

b Fold change in IC50 (vs. HXB2) using PhenoSense HIV Entry Assay





# **T20 Resistance Mutations**

	*	
SDM Virus	T20 Sens.a	T20 FCb
HXB2 G I V		1.0
NL4-3 G I V	S	5.2
NL4-3 D I V		12.8
NL4-3 G I M	S	33.0
NL4-3 S I V	S	74.2
NL4-3 D I M	R	113.0
NL4-3 S I M	- R	227.4
NL4-3 D T V	R	>281.8
JRCSF G I V		2.1
JRCSF D I V		104.0
,		

- <sup>a</sup> Rimsky et al., J. Virol. 72(2):986-993
- <sup>b</sup> Fold change in IC50 (vs. HXB2) using PhenoSense HIV Entry Assay

# Table 6

Entry Inhibitor Susceptibility: T-20 Fusion Inhibitor

Drug resistance mutations were introduced into well-characterized X4 tropic (NL4-3) and R5 tropic (JRCSF) viruses. T20 susceptibility was measured using the virus entry assay. The fold change (FC) in T-20 susceptibility for each virus was determined by dividing the IC50 of the test virus by the IC50 of the HXB2 strain of HIV-1. T-20 sensitivity of similar mutant viruses has been reported in the scientific literature (Rimsky et al.,).

# 4

# Identifying Entry Inhibitor Resistance Mutations

Virus			A	6	ec	me	u	AA Sequence <sup>a</sup>				
HXB2	0		7	8	9	Ţ	>	Q	Ó	Q		
1	Q			2	9	I	<b>&gt;</b>	Ó	Q	Q		
2	Ó		7	2		Ι		Q	Q	Q		
3	Ó			S	×	Ι	×	Q	Q	Q	X=G/S	X=X
4	Ó			8	9	H	<b>\</b>	Q	Q	Q		
2	Ó			8	9	Ι	<b>&gt;</b>	Ò	Q	Q		
9	Q			8	×	Ι	×	Ŏ	Q	Q	X=G/S	<b>X=</b> Λ
7	Ó			8	9	Τ	>	Q	Q	Q		
8	Ó	7		8	9	Ι	>	Ó	Q	Q		
6	Ò			S	9	Ι	>	Ò	Q	Q		
10	Q			8		Ι	>	Q	Q	Q		
12	Q			8	×	Ι	>	Q	Q	Q	X=G/D	
13	Q			S	9	Ι	>	Ò	Ó	Q		

a gp41 amino acid sequence positions 32 to 41



Identifying	Entry	Inhibitor	Resistance	Mutations
"ac" y "g	~····		, toolotariot	matations

<u>Virus</u> <u>AA Sequence</u> <sup>a</sup>	
HXB2 QLLSGIVQQ	
1 QLLSGIVQQQ	
2 QLLSSIMQQQ	
3 QLLSXIXQQQ X=	G/S X=V/M
4 QLLSGIVQQQ	
5 QLLSGIVQQQ	
6 QLLSXIXQQQ X=	G/S X=V/M
7 QLLSGIVQ-QQ	
8 QLLSGIVQQQ	
9 Q L L S G I V Q Q Q	44
10 QLLSDIVQQQ	
12 $QLLSXIVQQQX=$	G/D
13 QLLSGIVQQQ	•

a gp41 amino acid sequence positions 32 to 41

# Table 7

Identifying Envelope Protein Mutations.

Viruses with reduced (or increased) susceptibility to an entry inhibitor are identified using the virus entry assay. Mutations that may confer reduced (or increased) susceptibility to the entry inhibitor are identified by sequencing the envelope genes of the sensitive and resistant viruses. The deduced amino acid sequences of the sensitive and resistant viruses are compared to identify candidate drug resistance mutations. The ability of a specific mutation to confer altered drug susceptibility is confirmed or disproved by introducing the mutation into a drug sensitive virus and measuring the susceptibility of the mutant virus in the virus entry assay. In the example represented here, a short stretch of amino acid sequences within the first heptad repeat (HR-1) of the HIV-1 gp41 transmembrane envelope protein is aligned for viruses exhibiting different T-20 susceptibilities. Highlighted amino acids represent mutations known to confer reduced susceptibility to T-20.

Similar analyses can be used to identify envelope amino acid sequences that (a) alter/influence susceptibility to CCR5 or CXCR4 inhibitors, (b) specify X4, R5 and dual tropism, and © elicit neutralizing antibodies.